

Final Notes January 27, 1999

BRIEFING ON PATH FY'98 FINAL REPORT
MEETING NOTES

December 16, 1998, 1:00 p.m.-4 p.m.

NORTHWEST POWER PLANNING COUNCIL OFFICES
PORTLAND, OREGON

I. Greetings and Introductions.

The December 16, 1998 briefing on the PATH FY'98 final report, held at the Northwest Power Planning Council's offices in Portland, Oregon, was presented by PATH coordinator Dave Marmorek and introduced by NMFS' Danny Consenstein.

The following is a distillation (not a verbatim transcript) of items discussed at the briefing. Please note that some enclosures referenced in the body of the text may be too lengthy to attach; all enclosures referenced are available upon request from NMFS's Kathy Ceballos at 503/230-5420 or via email at kathy.ceballos@noaa.gov.

II. Overview of PATH FY'98 Final Report.

Marmorek said that, as most people in the region are aware, PATH consists of about 30 scientists from a wide variety of state, federal and tribal entities, including the Oregon, Washington and Idaho state fishery agencies, CRITFC, NMFS, BPA, the Corps and the U.S. Fish and Wildlife Service, as well as independent scientists. I wanted to begin by giving you an overview of PATH's objectives, and how the work accomplished in FY'98 fits into those objectives, Marmorek said.

Working from a series of overheads, Marmorek described the PATH objectives and FY'98 accomplishments, as well as a number of other specific facets of the PATH effort in FY'98 and FY'99. These overheads are attached as Enclosure A; please see this document for details of Marmorek's presentation. Marmorek also distributed an Executive Summary of the PATH FY'98 Final Report, a concise written version of the information presented at today's briefing; this document is attached as Enclosure B.

Marmorek said PATH's objectives include:

- Determine the overall level of support for key alternative hypotheses from existing information, and propose other hypotheses and/or model improvements that are more consistent with these data (retrospective analyses)

- Assess the ability to distinguish among competing hypotheses from future information, and advise institutions on research, monitoring and adaptive management experiments

that would maximize learning, and

Advise regulatory agencies on management actions to restore endangered salmon stocks to self-sustaining levels of abundance (prospective and decision analyses).

Marmorek said PATH has made significant progress on all three of these objectives during FY'98; some of the highlights of PATH's activities include:

A workshop in October 1997 to evaluate and refine preliminary prospective analyses for spring and summer chinook.

Publication of the Preliminary Decision Analysis Report on Snake River Spring/Summer Chinook in March 1998.

Publication of Retrospective and Prospective Analyses of Spring/Summer Chinook Reviewed in FY'97, in April 1998.

Development and refinement of fall chinook passage and life-cycle models, and assembly of fall chinook spawner-recruit data during February-July 1998.

A preliminary assessment of the effects of management actions on fall chinook in August, 1998.

Revised Executive Summary of the Preliminary Decision Analysis Report, distributed to the Implementation Team on August 4, 1998.

The PATH Weight of Evidence Process to compile and assess the evidence for and against key hypotheses affecting the spring/summer decision analysis during May to August, 1998.

Publications and Scientific Review Panel review of the PATH Weight of Evidence Report (WOE) in August 1998.

A workshop with the SRP to document their best judgement on the relative likelihood of key hypotheses, and a workshop report published in September 1998. This report also included SRP recommendations to PATH regarding the application of experimental management and relevant modeling approaches (Objective 2).

Assessment of additional actions both spring/summer chinook and preliminary assessment of options for fall chinook during September-October 1998.

Completion of qualitative assessments of the effects of actions on Snake River steelhead (March-October 1998).

Development of historic assessments of smolt-to-adult returns (SARs) for Snake and

Upper Columbia River steelhead, and Snake River spring chinook (December 1997-May 1998).

Initiated assessments on sockeye salmon (October 1998).

Completion of a discussion paper on applying experimental management to the Columbia River, which builds on the SRP's suggestions in their report from the Weighting Workshop (October 1998).

Marmorek then moved on to a detailed summary of the results of PATH's assessment of actions in 1998. This information is contained in Enclosures A and B; please see these documents for details of Marmorek's presentation.

A number of questions and comments were provided by the audience in the course of Marmorek's briefing. Referring to the bar graphs titled "Weighted Average Probabilities of Exceeding Thresholds – Spring/Summer Chinook" on pp. 19-20 of Enclosure A, one meeting

participant voiced his opinion that what this shows is a set of hypotheses that, despite 30 years of research, says we would lower our survival probability by transporting more, if we compare the results for Alternatives A1 and A2. Isn't that more political science than biological science? he asked.

No, replied Marmorek. You end up with slightly lower probability of survival under Alternative A2, there is very little dispute about the transport-to-control ratios. I think it's fair to say that all of the PATH scientists agree that there is some benefit to transportation; transport-to-control ratios are generally greater than one. However, the question is, what happens to those fish once they leave the barge, and what fraction of them survive to spawn? Barge survival times post-Bonneville survival determines what overall survival is, said Marmorek. In a given year, if barge survival is 0.98, and in-river survival is, say, 0.3, that would be a threefold-higher survival in the barge than you saw in the river. If you end up with a transport/control ratio of 2-1 when all is said and done, you would have to have poorer survival of those transported fish after Bonneville, because it was three times better once they reached Bonneville, but it was only two times better once they all came back.

We used different passage models, Marmorek continued; admittedly, there weren't as many transport-to-control studies as we would have liked during the 1980s. However, we have used all of the available data; we've looked at the differences between historical and more recent data, and this effort has been extensively documented in our report. I still say that there isn't any study, anywhere, that says that transporting fish will reduce their survival, the meeting participant said. However, that's what this chart says, and in my opinion, that is contrary to all of the available scientific evidence.

Moving on to fall chinook, Marmorek went through the table showing the fraction of runs meeting all standards – summary for all species on p. 24 of Enclosure A; he then responded to a question about the graph on the next page, showing modeled escapement SARs for Alternatives A1, A2 and A3. What we're saying here is that these are the combined results for all the runs we did for A1, A2 and A3, Marmorek explained – roughly 2,500 combinations of hypotheses and actions. For each of these combinations of actions and hypotheses, we computed the 24-year, 48-year and 100-year median SAR, he said. The next thing we looked at was, for each of those combinations, did it meet the 24-year, 48-year and 100-year survival standard or not. At the end of that exercise, we sorted that list of combinations and said, for those which always met the various survival standards, what SAR did they have? To pass muster, they had to have SARs of 3% or higher.

Another way to sort the data was to say, for those combinations of actions and hypotheses that had SARs of 2%-3%, what percentage met the 100-year survival standard, Marmorek continued. Basically, the SAR varies from year to year, and we had to calculate the deviant over all of those simulations, he said. In general, this is a way of summarizing a large number of runs by saying that, out of all these runs, regardless of what hypothesis or action you're assuming, what kind of an SAR do you need, on average, over 100 years, to meet the survival standard? Marmorek explained.

Next, Marmorek discussed the results from PATH's sensitivity analyses on pp. 28-32 of Enclosure A. In every sensitivity analysis, there are assumptions about transportation, or changes in predation, said one meeting participant. For example, most of what is driving the

survival benefits from drawdown is actually changes in the rate of predation. I dimly recall sitting in this room a few years ago and listening to NMFS tell us that reservoir mortality was really high, but predation wasn't a problem in the Snake. If you assume that predation can be changed, he said, how would that affect the A2 and A3 type scenarios?

The passage models we're considering reflect, for both spring/summer and fall chinook, a different range of assumptions about in-river survival, both as a function of water travel time (flow) and response to predators, Marmorek replied. In the case of the spring models, CRiSP does that explicitly, while FLUSH does that more implicitly, in terms of the relationship between fish travel time and survival. In the case of the fall chinook models, both CRiSP and FLUSH are mechanistic models that explicitly consider predation and how predation is affected by temperature, as well as how the encounter rates with predators would vary with flow, Marmorek explained. Those assumptions are described in the FY'98 final report, he added.

We also have some alternative hypotheses with respect to how effective predator removal programs are, Marmorek continued, ranging from a 0% reduction in reservoir mortality to a 25% reduction in reservoir mortality. What I'm saying is that the models themselves incorporate a range of assumptions with regard to the factors you've just described.

However, they're not transparent to us, said the meeting participant. I for one would like to see what the results might look like if you don't assume that there is such a thing as delayed mortality, for example, or if we assume that the radio-tag studies are correct when they say it is now easier for adults to make their way upstream through the Lower Snake corridor than it used to be. We have these enormous differences in your results for A2 and A3, driven by hypotheses, such as transportation killing fish and so forth, yet there have been no sensitivity analyses across these hypotheses at all, he said.

Actually, there are some sensitivity analyses in the report, although I haven't presented them today, Marmorek replied. We do look at how some of these results vary across CRiSP and FLUSH, for example. I would add that there is concurrence between both the CRiSP modelers and the FLUSH modelers that there is delayed mortality of transported fish, he said. The factor that we use is the relative post-Bonneville survival of transported fish to in-river fish, Marmorek explained, based on the transport-to-control studies and their estimates of in-river survival. For fall chinook, he continued, we don't have transport-to-control studies, so we have to rely on a more indirect way of estimating the amount of post-Bonneville mortality on transported fish. If you assume zero post-Bonneville mortality on transported fish, we would be seeing way more fall chinook than we're currently seeing return, Marmorek said. If you do estimates based on the available spawner/recruit data to develop the most likely ratio of post-Bonneville survival, it's in the neighborhood of 0.05-0.25, depending on various other assumptions.

We're in the process of doing some further analyses of those methods for fall chinook, Marmorek continued, and are applying some of the same methods we used for fall chinook to spring/summer chinook to develop indirect estimates. The bottom line, however, is that neither the transport/control data nor the spawner/recruit data supports the idea that there is no delayed mortality for transported fish.

Marmorek moved on through a discussion of PATH's upcoming experimental management work, and provided an overview of other key PATH FY'99 tasks. In response to a question,

Marmorek said the full text of the 250-page FY98 final report is now available via PATH's Internet homepage; he added that the next PATH report, scheduled for delivery in March 1999, will be an update of this report, and will include additional work on fall chinook, scoping of the work involved in doing an assessment of the Mid-Columbia stocks, as well, potentially, as additional work on experimental management and spring/summer chinook.

Will the March PATH report fit into the Corps' Lower Snake EIS, which is currently scheduled to be released for public review in April 1999? asked another meeting participant. No, because the deadline for material to be included in the draft EIS is January, Marmorek replied. However, other work PATH has done will be distributed concurrently when the EIS goes out for public review this spring, he said. In response to another question, he said PATH will be presenting periodic updates on its progress to the Implementation Team throughout 1999; these meetings may provide a forum for at least some public comment while PATH's work is in progress.

Another participant asked whether PATH's meetings will be open to the public in FY'99. It's a question of how the public would best be served, Marmorek replied. I would prefer that we have meetings with the public once the PATH scientists feel they have debated the results to the point that they have some agreement on what the conclusions are, he said; it's a difficult process, and, frankly, it's tough enough to ensure a fair exchange of ideas among 25 scientists, without trying to allow for public comment as well. That doesn't mean PATH isn't open to answering questions from the public on any portion of the analysis, Marmorek said; it's a question of getting those analyses done within the time-frame available to us. If every meeting is a public meeting, we're not going to be able to get our job done, at least in my opinion, he said.

Will there be a discussion scheduled between people who are interested in the PATH report, once they have an opportunity to review it, and PATH? asked another participant. I would suggest that, once you read the report, if you would like to schedule such a discussion, that you contact me, said IT chairman Brian Brown of NMFS -- we'll figure out what the most appropriate way would be to set up a productive discussion. And if we could get at least some questions ahead of time, that will allow us to provide better answers, Marmorek added.

With that, the briefing was adjourned. Meeting notes prepared by Jeff Kuechle, BPA contractor.